Customer : ROXBURGH ELECTRONICS LIMITED

No. SS-96-1112

Date : Jan. 31. 1996

Attention:

Your ref. No:

Your Part. No:

SPECIFICATIONS

ALPS' :

MODEL RSA0K11A1

F.E.C. No: 642-873

Sample No. : G0446148M

RECEIPT STATUS

RECEIVED

By. Date

Signature

Name

Title

ALPS ELECTRIC CO., LTD.

HEAD OFFICE
1-7, YUKIGAYA-OHTSUKA-CHO,
OHTA-KU, TOKYO 145 JAPAN

DSG'D H. Kimura

APP'D Y. Yoshioka

ENG. DEPT. DIVISION

Sales

No. SS-96-1112

SPECIFICATIONS

1. THIS SPECIFICATIONS APPLY TO RSA0K11A9 POTENTIOMETERS.

2. CONTENTS OF THIS SPECIFICATIONS.

4SA01M0051
4S0001-200, 4S0001-203M
SA01MA905

3. MARKING

·MARKING ON ALL UNITS
DATE CODE, RESIST. VALUE, TAPER, TRADE MARK

CLASS.NO.	TITLE	
	MASTER TYPE POTENTIOMETER (SLIDE)	

1. Environment 一般事項

1. 1 Operating temperature range 使用温度範囲 −10〜60℃

1. 2 Storage temperature range 保存温度範囲 −30〜70℃

1. 3 Test conditions 試験条件

Unless otherwise specified, the standard range of atmospheric conditions for making measurements and test is as follows,
- Ambient temperature : 5℃ to 35℃
- Relative humidity : 45% to 85%
- Air pressure : 860mbar to 1060 mbar.

試験及び測定は特に規定がない限り温度5〜35℃、相対湿度45〜85%、気圧860〜1060mbarの標準状態のもとで行う。

If there is any doubt about the results, measurements shall be made within the following limits,
- Ambient temperature : 20±2℃
- Relative humidity : 60 to 70%
- Air pressure : 860mbar to 1060mbar.

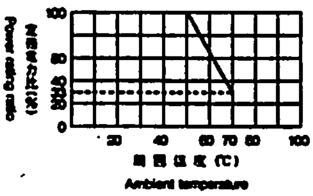
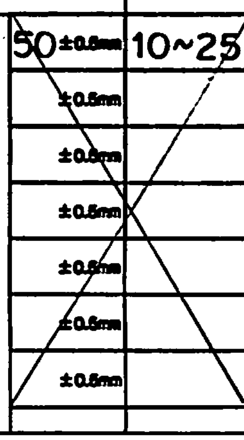
ただし、判定に疑義を生じた場合は温度20±2℃、相対湿度65±5%、気圧860〜1060mbarにて行う。

2. Appearance 外 観

The potentiometer shall be well done and not have any excessive rust, crack, split, poor plating and discolor in any portion.

各部の仕上げは良好で機能上有害なサビ、キズ、ワレ、メッキ不良及び剥離などがあってはならない。

3. Electrical characteristics 電気的性能

	Item 項目	Conditions 条件	Specifications 規格
3. 1	Nominal total resistance and tolerance 公称全抵抗値および許容差	Measurement shall be made by the resistance between terminal 1 and 3 with lever setted at terminal 1 or 3. レバーを端子1又は、3の終端におき、抵抗器の端子1−3間の抵抗値を測定する。	10K Ω±20%
3. 2	Power rating 定格電力	Power rating is based on continuous full load operation at the maximum voltage between terminals 1 and 3. Power rating vs. ambient temperature shall be denoted on the following graph. 端子1と3の間に連続負荷することができる最大電力。周囲温度に対する電力軽減曲線は右図とする。 	0.25 W ~~A.C.50V~~
3. 3	Rated voltage 定格電圧	Rated voltage 定格電圧 $E=\sqrt{PR}$ (V) P : Power rating 定格電力 (W) R : Nominal total resistance 公称全抵抗値 (Ω) When the rated voltage exceeds the maximum operating voltage, the maximum operating voltage shall be the rated voltage. ただし、定格電圧が最高使用電圧を超える場合は、この最高使用電圧を定格電圧とする。 Maximum operating voltage 最高使用電圧	△ A.C. 350 V △ D.C. 20 V ~~A.C. 50 V~~
3. 4	Resistance law (Taper) 抵抗変化特性	Measurement shall be made by the resistance law method, 電圧法にて測定 Measurement shall be made at the position of right diagram from the edge at the side of terminal 1. When based on terminal 3, from the edge at the side of terminal 3. $\frac{\text{Outputvoltage between terminals 1 and 2}}{\text{Appliedvoltage between terminals 1 and 3}}\times 100(\%)$ $\frac{1-2端子間出力電圧}{1-3端子間印加電圧}\times 100(\%)$ $\frac{\text{Outputvoltage between terminals 1 and 2}}{\text{Appliedvoltage between terminals 1 and 3}}$ (dB) $20\log\frac{1-2端子間出力電圧}{1-3端子間印加電圧}$ (dB) 	Unit (単位) ☑ % ~~□ dB~~ TAPERED CURVE ALPS "A" (SAS32)

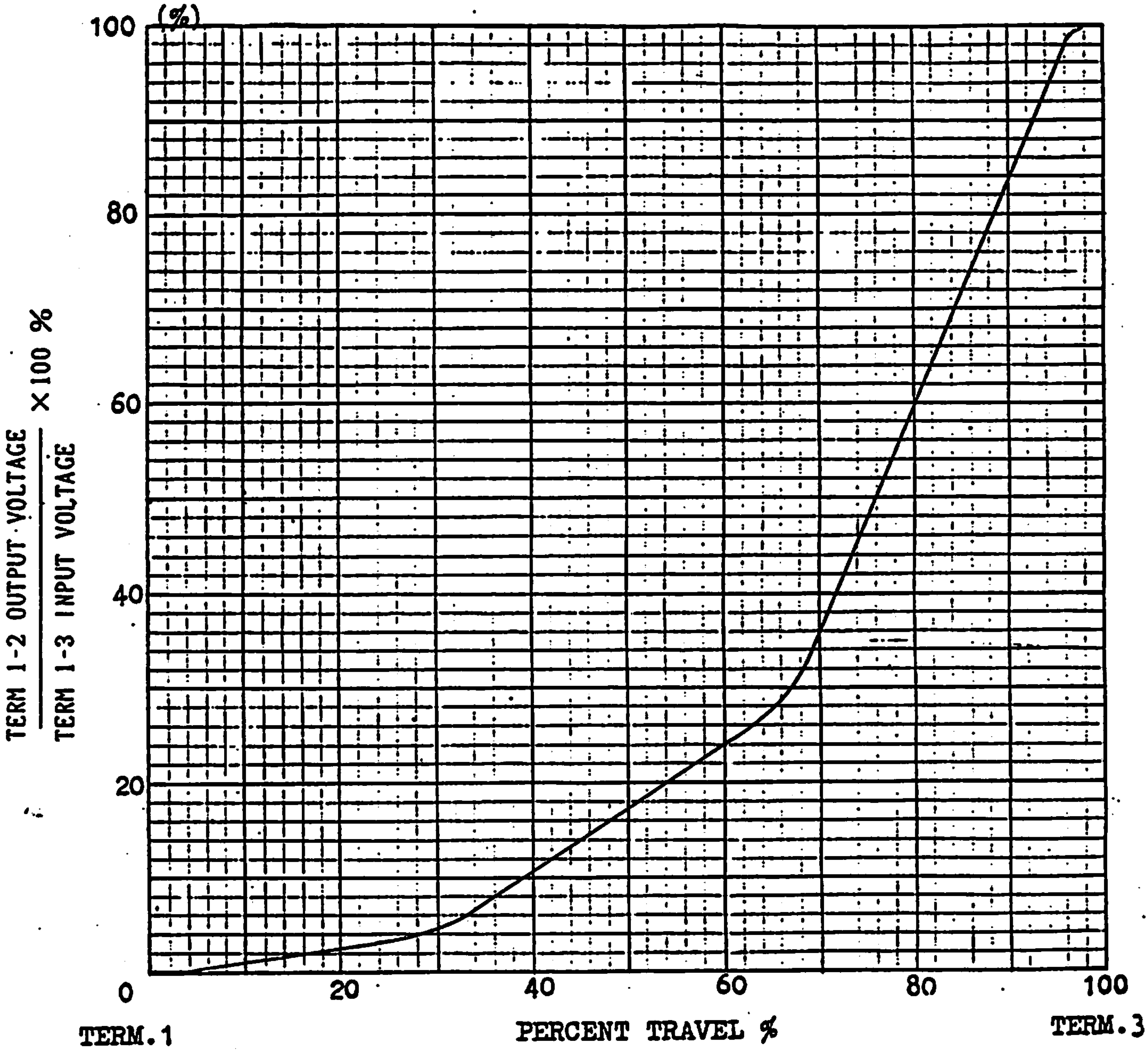
	. .				ALPS ELECTRIC CO., LTD.				
	. .								
	. .				APPD. Jul. 09 '90	CHKD. Jul. 6 '90	DSGD. Jul. 06 '90	TITLE SPECIFICATIONS	
	. .								
△2	Jan 10 '91	Y.Y		Y.H	A. Takahashi	H. Nagisawa	Y. Watanabe	DOCUMENT NO. 4SA01M0051	(1/4)
SYMB.	DATE	APPD.	CHKD.	DSGD.					

印刷 Ⓢ

(規格・仕様書用紙) W7306 A4 89.9. 2,000 冊 OR

USED ON 100 mm TRAVEL TYPE	NAME RESISTANCE TAPER
ALPS ELECTRIC CO., LTD. 1-7 YUKIGAYA OTSUKA-CHO OTA-KU TOKYO JAPAN	TITLE SPECIFICATIONS

TAPERED CURVE: ALPS "A"



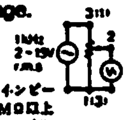
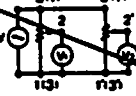
NOTES: PERCENT VOLTAGE CHECK POINT — TOLERANCE

50 % TRAVEL FROM TERM.1 — 10 - 25 %

					APFD.	CHKD.	DSGD.	NAME RESISTANCE TAPER
					Apr. 7.'89		Apr. 11.'89	DWG. NO. SAS 32
SYMB.	DATE.	APFD.	CHKD.	DSGD.	H. Vncuul		S. Sanfm	

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CLASS NO.	TITLE MASTER TYPE POTENTIOMETER (SLIDE)	

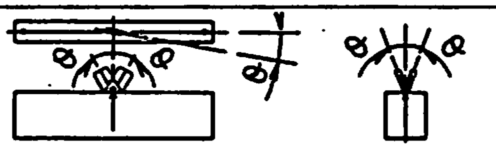
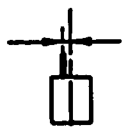
	Item 項　目	Conditions 条　件		Specifications 規　格
3. 5	Attenuation and insertion loss 最大減衰量と挿入損失	The attenuation and insertion loss at each end of lever travel shall be measured. しゅう動子を移動距離の各終端に置いたとき　最大減衰量，挿入損失を測定する。 The voltage of 2 Vr.m.s. to 15 Vr.m.s. shall be applied between terminal 1 and 3 by measuring frequency at 1 kHz The output voltage shall be measured between terminals 1 and 2 and between terminals 2 and 3. If there is not any doubt about the results, DC voltage shall be used as the test voltage. 端子1−3間に1kHzで2〜15V（正弦波実効値）の電圧を加え，端子1−2間，端子2−3間の出力電圧を測定する。なお，判定に疑義が生じなければ，試験電圧として直流を用いてもよい。  電圧計の入力インピーダンスは，10MΩ以上 Input impedance of the voltmeter : 10MΩ or more		Attenuation 最大減衰量 100 dB or more 以上 Insertion loss 挿入損失 within 0.1 dB以内
3. 6	Noise しゅう動雑音	DC 20V, when the rated voltage is 20V or less, its rated voltage shall be applied to the terminals between 1 and 3. And then the noise shall be measured by the specified speed. For other procedures, refer to IEC Pub. 393-1-6. Test Method B. Traveling speed:20mm/sec 端子1−3間に直流電圧20V(定格が20V以下の時は，その電圧)を加え，レバーを20mm/秒の速さで移動させ，このときに発生する雑音電圧を測定する。その他 JIS C 5261A法による。		Less than 47 mVP-P 未満 Exclude the pop-noise in the travel area 5mm from the end of the term.1 This condition shall also apply to the products after the durability test. 1端子末端より5mm以内のポツノイズは、無視。 耐久性試験後も含む。
3. 7	Insulation resistance 絶縁抵抗	A voltage of 250V DC shall be applied for 1 min., after which measurement shall be made. D.C.250Vの電圧を1分間印加して測定。	Between individual terminals and frame/lever ~~Between adjacent terminals~~ 端子ーレバー間 端子ー　枠　間 ~~独立した抵抗素子の端子間~~	100MΩ or more 以上
3. 8	Dielectric strength 耐電圧	Trip current : 2mA Measuring frequency : 50/60Hz 250V AC for 1 min. A.C.250Vr.m.s. 1分間。 感度電流 2 mA(周波数50/60Hz)	Between individual terminals and frame/lever ~~Between adjacent terminals~~	Without damage to parts, arcing or breakdown etc. 損傷，アークおよび絶縁破壊を生じないこと。
3. 9	Tracking error 連動誤差	The voltage of 2 Vr.m.s. to 15 Vr.m.s shall be applied between terminals 1 and 3 and between terminals 1' to 3' by measuring frequency at 1kHz. The output voltage shall be measured between terminals 1 and 2 and between terminals 1' and 2' (for the C and RD taper, the measurement shall be made between terminals 2 and 3 and between terminals 2' and 3) units the first of these shall be the standard one. If there is not any doubt about the results, DC voltage shall be used as the test voltage. 端子1−3間，端子1'−3'間にそれぞれ1kHzで2〜15V(正弦波実効値)の電圧を加え，前段を基準として端子1−2間，端子1'−2'間(3端子基準の場合は，端子2−3間，端子2'−3'間)の出力電圧を測定する。なお，判定に疑義が生じなければ，試験電圧として直流を用いてもよい。	At 50% of lever travel 移動距離の50%の位置 __ dB〜__ dB __ dB〜__ dB __ dB〜__ dB  電圧計の入力インピーダンスは，10MΩ以上 Input impedance of the voltmeter : 10MΩ or more	± __ dB ± __ dB ± __ dB ± __ dB

ALPS ALPS ELECTRIC CO., LTD.

SYMB.	DATE	APPD.	CHKD.	DSGD.	APPD.	CHKD.	DSGD.	TITLE
Original	Jul. 06 '90	K. T	K. N	Y. W	May. 19 '92 Y. Yoshioka	May. 19 '92 S. Abe	May. 15 '92 N. Narisawa	SPECIFICATIONS DOCUMENT NO. 4SA01M0051 (2/4)

CLASS.NO.	TITLE	
	MASTER TYPE POTENTIOMETER (SLIDE)	

4. Mechanical characteristics 機械的性能

	Item 項目	Conditions 条件	Specifications 規格
4.1	Lever travel レバー移動距離		100± 1 mm
4.2	Operating force 作動力	Traveling speed : 20mm/sec Operating position : Tip of the lever 移動速度は20mm/秒とする。 操作位置はレバー先端部とする。	30 gf± 30/20 gf
4.3	Lever travel stop strength レバーの移動止強度	A static load of 10Kgf shall be applidied at the point 10mm from the mounting plate for both ends in the direction of lever travel for 10sec. If the lever height is less than 10mm, it shall be measured at the tip of the lever. しゅう動距離の両末端において取り付け面より10mmの位置に10Kgfの静荷重を10秒間加える。但し、レバー長さ10mm未満の場合はレバーの先端で測定する。	Without excessive play or poor contact 著しいガタ、および接触不良を生じないこと。
4.4	Side thrust of the lever レバーの横押し強度	A static load of 2kgf shall be applied at the point 5mm from the mounted plate in a direction perpendicular to the axial direction for 10 sec., with the potentiometer mounted in assembly conditions. 本体をシャーシに固定し，取付け面より5mmの位置にレバー移動方向に対して直角方向に2kgfの静荷重を10秒間加える。	Without deformation or breaks in the sliding part and contact part. 操作部および関連部品に変形，破損がないこと。
4.5	Thrust and tensile lever レバーの押し引き強度	Thrust and tensile static load of 10kgf shall be applied to the potentiometer in the lever direction for 10 sec. レバーの押し方向および引張り方向に10kgfの静荷重を10秒間加える。	Without damage such as bad Sliding and braking or play in the lever. Electrical characteristics shall be satisfied. レバーのガタ，および破損，しゅう動ムラ等がなく，電気的性能を満足すること。
4.6	Displacement of lever レバーの横振れ	A torsion moment of 250gf·cm shall be applied at the lever in a direction perpendicular to the axial direction and then the displacement shall be measured. レバーに250gf·cmの曲げモーメントを移動方向に対して直角に加えレバー先端で測定する。	1.6mmP-P or less 以下
4.7	Lever inclination and torsion レバーの傾きおよびねじれ		θ shall be 2° or less. Return to the same position after torsion. θは2度以下。また，ひねりを加えた時，元に戻ること。
4.8	Distance from the center of the lever レバーのセンターズレ	After sliding lever as far as it will go in each direction, the distance from the center of the lever to the middle of the mounting screw hole shall be measured at the both ends. 取付けネジ穴中心に対するレバーのセンターからのずれを片側ごとに測定する。 	0.5mm or less on each end. 片側0.5mm以下。
4.9	Resistance to soldering heat はんだ耐熱	Bit temperature : 350°c or less Application time of soldering iron : 5 sec or less 温度350℃以下。時間5秒以内。 ただし，端子に異常加圧のないこと。	Change in total resistance is relative to the value before test : 5% Without excessive looseness of terminals and failure contact. 全抵抗値の変化は初期値の±5%以内。 著しいガタ，接触不良を生じない。

	. .				ALPS ELECTRIC CO., LTD.			
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	. .				APPD. Jul.09'90	CHKD. Jul.6'90	DSGD. Jul.06'90	TITLE SPECIFICATIONS
	. .							
	. .							DOCUMENT NO.
SYMB.	DATE	APPD.	CHKD.	DSGD.	M. Takahashi	H. Nomura	J. Watanabe	4SA01M0051 (3/4)

印刷 Ⓢ

5. Endurance 耐久性能

<table>
<tr><th></th><th>Item
項　目</th><th>Conditions
条　件</th><th>Specifications
規　格</th></tr>
<tr><td>5. 1</td><td>Endurance without load
無負荷しゅう動寿命</td><td>The moving contact, without electrical load, shall be slided from one end stop to the other and returned to its original position extended over 90% or more effective distance.
This procedure constitutes 1 cycle.
And the moving contact shall be subjected to 600 cycles per hour, a total of 100000±200 cycles (5,000 to 8,000 continuous cycles for 24 hours.)

無負荷にてレバーを600サイクル/時の速さで有効移動距離の90%以上にわたり，1日連続5000~8000サイクル，合計100000±200サイクル移動させる。</td><td>Change in total resistance is relative to the value before test: ±15%
Noise: less than 150mVp-p
Operating force: 10~80gf
Clause (3), (4) shall be satisfied.

全抵抗値の変化は
初期値の±15%以内
しゅう動雑音は
150mVP−P未満
作動力 10~80gf
その他は，(3項)(4項)を満足すること。</td></tr>
<tr><td>5. 2</td><td>Cold
耐寒性</td><td>The potentiometer shall be stored at a temperature of −30±2℃ for 96 hours in a thermostatic chamber. Then the potentiometer shall be taken out of the chamber and its surface moisture shall be removed.
And then the potentiometer shall be subjected to standard atmospheric conditions for 1 hour, after which measurement shall be made.

−30±2℃の恒温槽中にて96時間放置し，常温常湿中に1時間放置後1時間以内に測定する。
ただし水滴は，取り除くものとする。</td><td>Change in total resistance is rerative to the value before test: ±20%
Clause (3) (4) shall be satisfied.

全抵抗値の変化は
初期値の±20%以内
その他は，(3項)(4項)を満足すること。</td></tr>
<tr><td>5. 3</td><td>Dry heat
耐熱性</td><td>The potentiometer shall be stored at a temperature of 70±2℃ for 240±8 hours in a thermostatic chamber.
Then the potentiometer shall be maintained at standard atmospheric conditions for 1 hour, after which measurements shall be made.

70±2℃の恒温槽中にて240±8時間放置し，常温常湿中に1時間放置後1時間以内に測定する。</td><td>Change in total resistance is relative to the value before test: $^{+5}_{-30}$%.
Noise: less than 150mVp-p
Operating force: 10~80gf
Clase (3) (4) shall be satisfied.

全抵抗値の変化は
初期値の+5~−30%以内
しゅう動雑音は
150mVP−P未満
作動力 10~80gf
その他は，(3項)(4項)を満足すること。</td></tr>
<tr><td>5. 4</td><td>Damp heat
耐湿性</td><td>The potentiometer shall be stored at a temparature of 40±2℃ with relative humidity of 90% to 95% for 96±4 hours in a thermostatic chamber.
And its surface moisture shall be removed.
And then the potentiometer shall be subjected to standard atmospheric conditions for 1 hour, after which measurement shall be made.

40±2℃相対湿度90~95%の恒温恒湿槽中にて96±4時間放置し，常温常湿中に1時間放置後1時間以内に測定する。
ただし水滴は，取り除くものとする。</td><td>Change in total resistance is relative to the value before test: $^{+35}_{-5}$%.
Noise: less than 150mVp-p
Operating force: 10~80gf
Clause (3) (4) shall be satisfied.

全抵抗値の変化は
初期値の+35~−5%以内
しゅう動雑音は
150mVP−P未満
作動力 10~80gf
その他は，(3項)(4項)を満足すること。</td></tr>
<tr><td>5. 5</td><td>Change of temperature
温度サイクル</td><td>The potentiometer shall be subjected to 5 successive change of temperature cycles, each as shown in table below. Then its surface moisture shall be removed.
And then the potentiometer shall be subjected to standard atmospheric conditions for 1 hour, after which measurements shall be made.

下記条件で5サイクル試験後，常温常湿中に1時間放置後1時間以内に測定する。ただし水滴は，取り除くものとする。

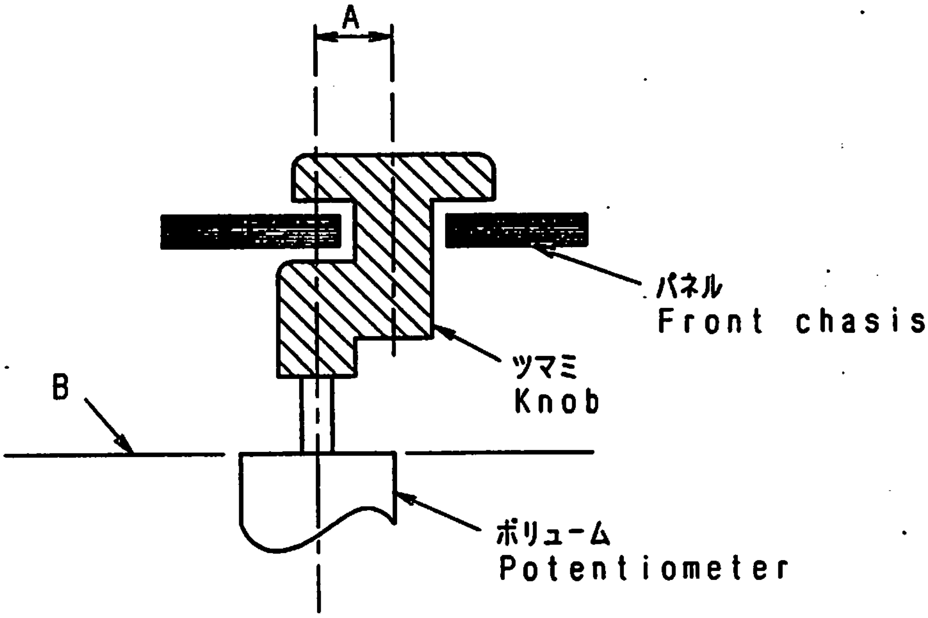
<table><tr><th>Step 行程</th><th>Temperature 温度</th><th>Duration 時間</th></tr><tr><td>1</td><td>−10±3℃</td><td>30 Min. 30分</td></tr><tr><td>2</td><td>Standard atmospheric conditions 常温</td><td>10~15 Min. 10~15分</td></tr><tr><td>3</td><td>70±2℃</td><td>30 Min. 30分</td></tr><tr><td>4</td><td>Standard atmospheric conditions 常温</td><td>10~15 Min. 10~15分</td></tr></table></td><td>Change in total resistance is relative to the value before test: ±20%
Noise: less than 150mVp-p
Operating force: 10~80gf
Clause (3) (4) shall be satisfied.

全抵抗値の変化は
初期値の±20%以内
しゅう動雑音は
150mVP−P未満
作動力 10~80gf
その他は，(3項)(4項)を満足すること。</td></tr>
</table>

ご使用上の注意
PRECAUTION IN USE

1. 偏心ツマミをご使用になる場合
   レバーの中心より離れたところを作用点としてご使用になる場合、可能な限り
   下図A寸法を短くしてご使用下さい。
   If it will be used the operating point away from the center line of the lever, it should be shorter as possible.

2. レバー長さについて
   レバー長さについては、ツマミを含めて、下図B面より極力短いものを
   ご使用願います。レバー長さについては、作用点までの距離が短いほど
   しゅう動感触が良好となり、長いほど好ましくない感触になります。
   About the length of lever
   If conditions permit, it is advisable to use the shortest possible lever.
   The longer the length up to operating point, the more unfavorable slide feeling will be given.



3. レバーの駆動に関しては上記内容を考慮の上、セット実装を行い
   あらかじめ異常のないことをご確認願います。
   Regarding the operation of the lever, please consider the above mentioned , and make sure nothing is wrong with the operation under installing in your appliance that you plan to use our products actually.

4. ツマミ挿入及びレバー操作は、ボリュームマウント基板に
   ソリ（曲がり）のない状態で行って下さい。
   Knob assembly on the lever and functioning the lever to be performed under the condition of P. C. B. without worp.

ORIGINAL	91-7-3	Y・Y	K・N	S・A
SYMB	DATE	APPD	CHKD	DSGD

ALPS ELECTRIC CO., LTD.

APPD.	CHKD.	DSGD.	TITLE スライドボリューム 仕様書 SPECIFICATIONS
PD1-ENG1 '95.7.24 YOSHIOKA	PD1-ENG1 '95.7.24 KIMURA	PD1-ENG1 '95.7.24 Y.SAITOH	DOCUMENT NO. 4S0001-200

OR

FOLLOW THE NEXT CONDITIONS FOR SOLDERING

1. Solder
   63 % Sn solder specified in JIS Z3282.

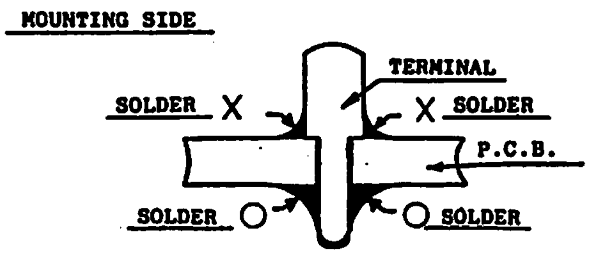
2. Board in Use
   Single face copper laid laminate board.
   Plate thickness (t) = 1.6 mm

3. In the Case of Manual Soldering
   Solder temperature ; 300°C MAX.
   Soldering period ; within 3 seconds
   Time of soldering ; only one time is permitted

4. Matters to Be Noted

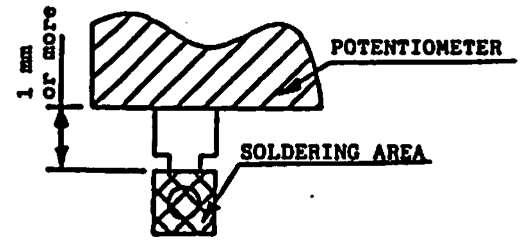
(1) Do not add any stress on terminals in the case of soldering. For instance, forced movement of potentiometer with terminals being heated may probably deteriorate the electric features due to generation of looseness in connection between resistant board and terminals.

(2) Use caution to soldering process so as to prevent solder from rising up to the surface of printed board on the side of installing potentiometer, because defective contact may take place in terminal connecting part due to soldering heat (Fig. 1)



(Fig. 1)

(3) In the case of lead wiring, solder it so that a gap of 1 mm or more may be reserved between the potentiometer body and soldering part. (Fig. 2)



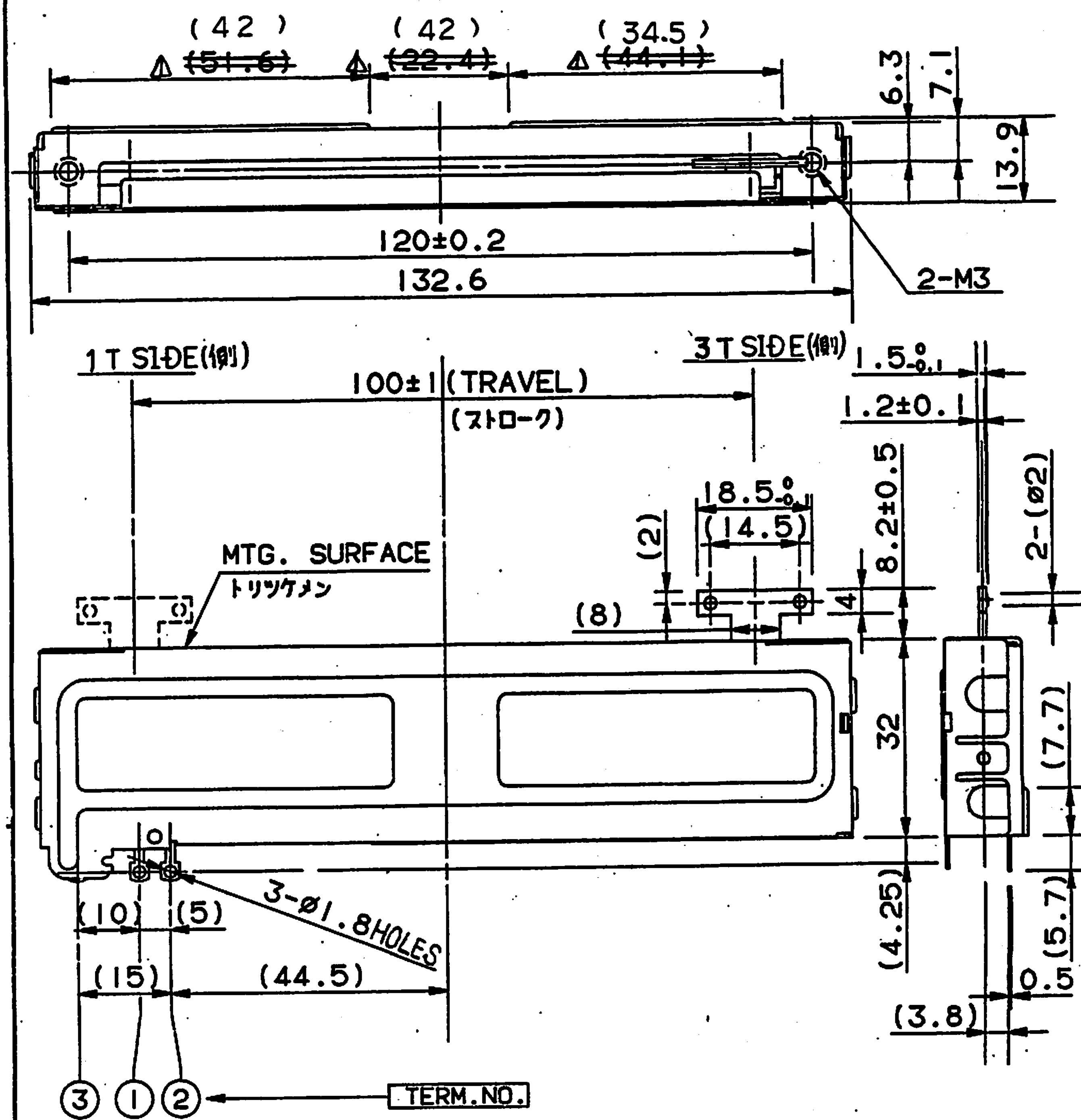
(Fig. 2)

(4) The grade of influence of soldering exerted on the potentiometer depends upon the size of a printed board, installing position of the potentiometer, and the size of a solder bath etc. Therefore, make sure, in advance, of no abnomal state under the conditions of soldering to be carried our at present.

SYMB.	DATE	APPD.	CHKD.	DSGD.

ALPS ELECTRIC CO., LTD.

APPD.	CHKD.	DSGD.	TITLE SLIDE POTENTIOMETER
Oct. 11 '91	Oct. 11 '91	Oct. 11 '91	
Y. Yoshida	S. Abe	N. Narisawa	DOCUMENT NO. 4S0001-203M



NOTE 1. MOUNTING SCREW THREAD LENGTH IS CHASSIS THICKNESS+4MM MAX.

1. トリツケヨウ ネジ ノ クビシタナガサハ シャーシイタアツ+4MM イカ トスル.

TOLERANCES UNLESS OTHERWISE SPEC	
BASIC DIMENSIONS	TOLERANCES
UP TO 10	±0.3
ABOVE 10 TO 100	±0.5
ABOVE 100	±0.8
ANGULAR DIMENSION	± 5°

PART NO.	NAME	MATERIAL NAME / CODE	FINISH
—	—	—	—

ALPS ELECTRIC CO., LTD.

SYMB	DATE	APPD	CHKD	DSGD
△3	Oct. 16 '93	Y.Y	Y.N	M.M
ショセイ	89-03-24	T.O	T.H	K.T

DSGD. セッケイ3-7900902 K. TAKAHASHI APR. 11 '89

CHKD. T. Hayashida Apr. 12 '89

APPD. [illegible] Apr. 12 '89

SCALE 1:1

UNIT mm

TITLE MASTER TYPE SLIDE POTENTIOMETER 100MM SINGLE UNIT

100ガタ タンレン スライドボリューム

DOCUMENT NO. SA01MA905

第6.1

Ⓢ 9-2 (8.2L) 印刷タイプ

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